**Speech and Voice Recognition**

**What is speech recognition?**

Ability of [computer](http://www.answers.com/topic/computer-1) systems to accept speech input and act on it or transcribe it into written language. Current research efforts are directed toward applications of automatic speech recognition (ASR), where the goal is to transform the content of speech into knowledge that forms the basis for linguistic or cognitive tasks, such as translation into another language.

**Areas application:**

**In the health care domain:**

* speech recognition technologies, medical transcriptionists have not yet become obsolete. The services provided may be redistributed rather than replaced.
* Speech recognition can be implemented in front-end or back-end of the medical documentation process.

**Military:**

1. **High-performance fighter aircraft:**

recognizers have been operated successfully in fighter aircraft with applications including: setting radio frequencies, commanding an autopilot system, setting steer-point coordinates and weapons release parameters, and controlling flight displays. Generally, only very limited, constrained vocabularies have been used successfully, and a major effort has been devoted to integration of the speech recognizer with the avionics system.

1. **Helicopter:**

The acoustic noise problem is actually more severe in the helicopter environment, not only because of the high noise levels but also because the helicopter pilot generally does not wear a facemask, which would reduce acoustic noise in the microphone.Substantial test and evaluation programs have been carried out in the past decade in speech recognition systems applications in helicopters, notably by(AVRADA) in US&(RAE) in the UK. Work in France has included speech recognition in the Puma helicopter.

1. **Battle management:**

Human-machine interaction by voice has the potential to be very useful in these environments. A number of efforts have been undertaken to interface commercially available isolated-word recognizers into battle management environments. In one feasibility study speech recognition equipment was tested in conjunction with an integrated information display for naval battle management applications. Users were very optimistic about the potential of the system.

1. **Training air traffic controllers:**

Training for military (or civilian) air traffic controllers (ATC) represents an excellent application for speech recognition systems.the recognizer was constrained in vocabulary, one of the goals of the training programs was to teach the controllers to speak in a constrained language, using specific vocabulary specifically designed for the ATC task.

**Benefits:**

* Speech recognition is used to enable deaf people to understand the spoken word via speech to text conversion, which is very helpful.
* Searches, queries, and form filling may all be faster to perform by voice than by using a keyboard.
* useful for people who have difficulty using their hands, ranging from mild repetitive stress injuries to involved disabilities that preclude using conventional computer input devices.
* Individuals with learning disabilities who have problems with thought-to-paper communication can benefit from the software.
* it does not require training and it is much faster than any other input.
* information can be input while the person in engaged in other activities and information can be fed via telephone or microphone which are relatively cheaper compared to current input systems.
* The latest cell phone models implement voice dialing by having the user press a key to record their voice. If you need to call your contact, you only need to press the key and state their name. Your cell phone does the rest.
* For students with learning disabilities, having their thoughts said out loud and then written in the computer reinforces their recall for vocabulary and usage.

**Limitation :**

The greatest limitation with speech recognition technology is that it is only accurate in optimum situations, where the speaker has devoted time to training the software to recognize his or her speech patterns, where audio quality and the accoustics of the recording environment are excellent, and where distracting background noises are minimal.

There is still the reality that mainstream computers will be hard pressed to process multiple sentences and recognize commands easily. Most speech recognition software needs to be configured in order to work properly, and it should recognize the tone of your voice first and save it to their data bank before it can function properly. However, computing trends are expected to change in a few short years, and we might see the introduction of speech recognition as an integral part of computing experience, not just in industries, but also inside our homes.

**What is voice recognition?**

a[bility](http://www.businessdictionary.com/definition/ability.html) of an [electronic](http://www.businessdictionary.com/definition/electronic.html) [security](http://www.businessdictionary.com/definition/security.html) [device](http://www.businessdictionary.com/definition/device.html) to [recognize](http://www.investorwords.com/4089/recognize.html) the voice (which is unique as a fingerprint) of a particular [person](http://www.businessdictionary.com/definition/person.html). In contrast, [speech recognition](http://www.businessdictionary.com/definition/speech-recognition.html) is the ability to recognize spoken [words](http://www.businessdictionary.com/definition/word.html) only and not the [individual](http://www.businessdictionary.com/definition/individual.html) voice [characteristics](http://www.businessdictionary.com/definition/characteristic.html).

**Applications**:

* General Motors utilizes voice identification systems to restrict access to some of its computer rooms
* INS has implemented voice identification system for frequent travelers that cross Mexican border
* U.S. Postal Service has implemented route sortation utilizing voice recognition system to speed mail delivery. This results in improved accuracy and reduction in the amount of employee training required.
* Wal-Mart uses voice directed picking at its warehouse facilities. The user speaks abbreviated numbers into the system and he will verify that they are at the right location before the stock is picked up.
* Charles Schwab & Company, Sears & Roebuck and Company and United Parcel Services of America Inc. have all utilized voice identification systems for customer service applications
* Physicians use voice recognition system to record patient data and make records while conducting observations

**Benefits:**

* A number of voice recognition [systems](http://www.webopedia.com/TERM/V/system.html) are available on the market.
* It can recognize thousands of words.
* It allows you to speak naturally.
* voice recognition only contributes part of the medical record, it saves money .
* The time saving feature is not in recording the data but in not having to wait a couple of days for the data to be transcribed and sent back through the mail.

**Limitation**:

* In fact the trick of recognising a voice is a very difficult one for any computer to do. It requires some very intelligent recognition algorithms, decent processing capability, good quality sound hardware, and a degree of patience and practice from the user.
* While accuracy has improved, dictating into a computer is still time consuming. Instead of spending a few minutes dictating over a recorder or through a cell phone when leaving the office, users are confined to a computer. They generally have to spend time correcting words and training the program to be more accurate.
* for some applications, the system tends to have high false reject rate due to the background noise and other variables

**Resources**

**Resources of speech recognition:**

<http://www.answers.com/topic/speech-recognition#Applications>

<http://en.wikipedia.org/wiki/Speech_recognition>

<http://www.doc.ic.ac.uk/~nd/surprise_95/journal/vol1/ks4/article1.html>

<http://www.washington.edu/accessit/print.html?ID=1209>

<http://guides.wkbw.com/Speech_Recognition-a855421.html#8067948>

**Resources of voice recognition:**

<http://www.businessdictionary.com/definition/voice-recognition.html>

<http://www.barcode.ro/tutorials/biometrics/voice.html>

<http://www.webopedia.com/TERM/V/voice_recognition.html>

<http://www.modecideas.com/faq93.html?newitems>

<http://cobweb.ecn.purdue.edu/~tanchoco/MHE/ADC-is/Voice/main.shtml>